

299. Having thus given my theory of the mode in which electro-chemical decomposition is effected, I will refrain for the present from entering upon the numerous general considerations which it suggests, wishing first to submit it to the test of publication and discussion.

June 1833.

IV¹

§ 6. ON THE POWER OF METALS AND OTHER SOLIDS TO INDUCE THE COMBINATION OF GASEOUS BODIES

300. THE conclusion at which I have arrived in the present communication may seem to render the whole of it unfit to form part of a series of researches in electricity; since, remarkable as the phenomena are, the power which produces them is not to be considered as of an electric origin, otherwise than as all attraction of particles may have this subtle agent for their common cause. But as the effects investigated arose out of electrical researches, as they are directly connected with other effects which are of an electric nature, and must of necessity be understood and guarded against in a very extensive series of electro-chemical decompositions (442), I have felt myself fully justified in describing them in this place.

301. Believing that I had proved (by experiments hereafter to be described (440)) the constant and definite chemical action of a certain quantity of electricity, whatever its intensity might be, or however the circumstances of its transmission through either the body under decomposition or the more perfect conductors were varied, I endeavoured upon that result to construct a new measuring instrument, which from its use might be called, at least provisionally, a *Volta-electrometer* (475).²

302. During the course of the experiments made to render the instrument efficient, I was occasionally surprised at observing a deficiency of the gases resulting from the decompositions of water, and at last an actual disappearance of portions which had been evolved, collected, and measured. The circumstances of the disappearance were these. A glass tube, about twelve

¹ Sixth Series, original edition, vol. i. p. 165.

² Or Voltameter.—December 1838.